REMARKS

Claims

Claims 53, 55, 56, 59, 60, and 62 are currently under examination with claims 1–52, 54, 57, 58, 61, 63, and 64 cancelled without prejudice or disclaimer. Claims 65–104 have been withdrawn from consideration due to restriction/election. Claims 105–108 are added by this paper.

Claim amendments

The claims have been amended to use language in accordance with conventional US practice and read on the elected subject matter.

Amended claim 53 incorporates the elements of claims 54 and 61, which are now cancelled. Support for the amendment can be found in, for example, the disclosure contained in page 5, paragraph [0012] and page 6, paragraph [0013] of the originally-filed specification.

Amended claim 62 incorporates the elements of claim 64, which is now cancelled. Support for the amendment can be found in, for example, the disclosure contained in page 7, paragraph [0016] of the originally-filed specification.

Newly added claims 105–108 are drawn to the elected subject matter. Support for the claims can be found in, for example, the disclosure contained in the paragraph bridging pages 11, lines 14–19 and 3; page 6, line 15–36 of the originally-filed specification and the disclosure contained in the Examples.

It is respectfully submitted that the claim amendments do not raise new matter. Entry thereof is earnestly solicited.

Claim objections

The Examiner is thanked for his careful reading of the claims. The objections, not specifically discussed herein, are moot in view of the amendments. Withdrawal of the objections is respectfully requested.

Rejections under §101

Insofar as the claims in the current form recite US process claims, the rejection of claims 53–56 and 59–61 for allegedly reciting non statutory subject matter is moot in view of the claim amendments. Withdrawal of the rejection is respectfully requested.

Rejection under 35 U.S.C. § 112, ¶2

In view of the amendments presented herein, it is submitted that the claim language is sufficiently definite, especially in the context of the disclosure contained in Applicants' own specification and the art knowledge available to a skilled worker prior to the filing of the instant application. Withdrawal of the rejection is respectfully requested.

Rejection under 35 U.S.C. § 112, ¶1

Applicants respectfully traverse the rejection of claims under 35 U.S.C. §112, ¶1 as allegedly lacking adequate written description and for allegedly being non-enabled.

It is respectfully submitted that the rejection is moot in view of the amendments. However, the following arguments are provided in support of the currently presented claims with respect to the statutory requirements under §112, ¶1.

Applicants' instant claims are directed to a method for diagnosing obesity comprising detecting sgk1 with an antibody directed thereto. The instant disclosure and the reference publications cited therein establish that sgk1 polypeptides and polynucleotides have been well-characterized in the art. The specification provides a detailed disclosure on the mode of action (for example, kinase activity) as well as cellular targets of the sgk1 polypeptide of the instant invention. For example, the specification teaches that sgk1 polypeptide of the instant invention modulates the activity of Na+-coupled transporter Sglt (sodium glucose transporter), particularly sglt1, in renal and intestinal cells. It is specifically taught that sglt1 proteins located in the apical membrane of the epithelial cells are responsible for the intestinal and renal transport of glucose, play a direct role in glucose homeostasis, and that the sgk1 polypeptide of the instant invention is a potent regulator of this transporter. See, the disclosure contained in paragraphs 2 and 3 at page 1 of the specification. The instant application additionally characterizes a role of sgk1 polypeptide in the regulation of sglt1 activity and discloses the molecular pharmacology of sglt1 modulation and its effects on glucose homeostasis. See, for example, the disclosure contained in the Examples.

Applicants' specification generically teaches that sgk1 activity is implicated with a wide variety of metabolic disorders, in particular, obesity. See, for example, page 1, lines 19–24 and page 4, lines 16–21. The specification further teaches that mutations in the sgk1 polypeptides have direct consequences in sglt1 activity. See, for example, the disclosure contained in Figs. 1 and 2 and the description thereof at pages 15–16 of the instant application. It is therein disclosed

that sgk1 increases the glucose-induced sodium current (i.e., sglt activity) and that the current is significantly increased with wild-type and S422Dsgk1 mutant compared to the controls (i.e., wherein sgk1 is not-expressed). The disclosure contained in page 2, lines 6–12 and page 7, lines 5–28 regard disclose genetic polymorphisms which results in the manifestation of metabolic disorders. In summary, Applicants' specification teaches that sgk1 is a biological and therapeutic target with respect to the diagnosis of metabolic disorders such as obesity.

Applicants' specification further provides express written description of the molecules (i.e., oligonucleotides and/or antibodies) which can be used for characterizing metabolic disorders which are associated with sgk1 activity, in particular, mutations and/or polymorphisms in sgk1 which result in altered glucose uptake. To this end, the disclosure contained in page 6, lines 15–21 is directed to the use of antibody molecules. Antibody molecules directed to phosphorylated and/or unphosphorylated sgk1 consensus sequences are also described. Insofar as the structures (for example, amino acid sequences) of the claimed sgk1 species were known in the art, antibodies directed thereto are also adequately described. See, *Noelle v. Lederman*, 355 F.3d 1343, 1349, 69 USPQ2d 1508, 1514 (Fed. Cir. 2004). As for the consensus sequence in the sgk1 polypeptides, it is now well-settled that a specification need not disclose, and preferably omits, what is well known to those skilled in the art when an application is filed (for example, with respect to the sequence of sgk1 species and/or domains thereof). See, e.g., *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987). See, also, MPEP §2164.05(a) and *Capon v. Eshhar v. Dudas*, (Fed. Cir. 2005) 418 F.3d 1349, 76 U.S.P.Q.2d 1078. Likewise, in the instant application, the specification need not provide express guidance with respect to the sequence/domains in sgk1 species that are commensurate with Applicants' claims so long as such species comprise the claimed amino acid residues along with the claimed kinase consensus sequences.

Therefore, view of the aforementioned arguments, it is courteously submitted that Applicants' claims in the current form, with adequate support from the instant specification and the references cited therein, fully conform to the written description requirement as stated in the PTO's own guidelines. Withdrawal of the rejection is respectfully requested.

Enablement

Newly presented claim 53 is aligned to a method for diagnosing obesity comprising

detecting the expression of sgk1 by the aid of an antibody that is directed against sgk1. Applicants' specification provides an enabling disclosure that over-expression of sgk1 causes a significant stimulation of the sglt1-activity. See, the disclosure contained in Figs. 1 and 2 and the description thereof in the paragraphs bridging pages 15 and 16 of the originally-filed specification. In this regard, Fig. 1 clearly displays that co-expression of sglt1 and wild-type sgk1 in oocytes leads to an up-regulation of the glucose induced current by nearly **100%** in comparison to controls (i.e., only sglt1 expression). Studies with mutant sgk1 comprising S422D mutation also demonstrate a similar result.

Further, from the descriptive portion of the specification and the art knowledge pertaining to the role of sglt1 in obesity, the instant disclosure teaches that sgk1 results in direct regulation of the activity of sglt1 Sodium dependent glucose transporters (sglt) have a defined role in predisposition of metabolic disorders such as obesity. The Examiner is cordially requested to review the enclosed publication by Fujita et al. (*Dibetologia*, 1998). For example, using an established rat model Fujita teaches that sglt1 activity is directly associated with the predisposition towards obesity in type II diabetes. See, the disclosure contained in Figs. 1 and 2 of Fujita et al. at page 1462 of the enclosed reference. In conclusion, Fujita teaches that sglt1 mRNA expression and activity thereof is *significantly increased* in "fatty rats." See, the experimental data in Fig. 4 and the description thereof in col. 1 last paragraph at page 1463 of the enclosed publication. See also the entire DISCUSSION section of the article.

The instant specification provides an enabling disclosure on the effect of sgk1 on sglt1 activity. See, the disclosure contained in the Examples. Mutations in the sgk1 polypeptides which modulate the activity of sglt1 (for example, sodium/glucose conductance) are clearly disclosed. The specification also provides a disclosure on the genetic polymorphisms in sgk1 gene and its implications on the human body weight. See, for example, the entire section on "study with twins" at page 20 of the instant application. The disclosure strongly corroborates the findings by Dieter et al. (*Obesity Research*, 2004), which demonstrate that the sgk1 polypeptide of the instant invention strongly regulates sglt1 activity. Therefore, the specification's teaching that the level of sgk1 (for example, a patient sample) as a valuable marker for the diagnosis of obesity is clearly credible as required.

Applicants' specification provides further disclosure on the use of antibody molecules and assay techniques utilizing such molecules for the study of sgk1 expression. Such antibody molecules were known in the art prior to the filing date of the instant application. Other

examples of immuno-assays that can be routinely employed, for example, ELISA are also disclosed. See, new claim 108. Therefore, the present application provides strong guidance to objectively enable one of ordinary skill in the art to make and use a diagnostic method according to the new present claim 53.

To support its contentions on non-enablement, the present Office Action relies on the disclosure by Vallon et al. (*Current Opinion in Nephrology and Hypertension*, 2005). However, Vallon does not disprove the rule of sgk1 in sglt1 regulation.

The publications by Palamada and Jayaraj do not disprove a role of sgk1 in obesity, as instantly claimed, but rather support it. The papers mainly points to a role of sgk1 in regulating the expression of glucose transporters. Palamada relates to the expression of glucose transporter isoform 1 (glut1) while Jayaraj is directed to the isoform 4 (glut4). Thus, the cited publications are directed to a role of sgk1 in the regulation of membrane-bound transporters glut1 and glut4, respectively. The authors merely state that the *functional* effect of glut1 and glut4 up-regulation by sgk1 remains to be investigated. This does not mean that the scope of the instant claims is non-enabled.

The Examiner's reliance on Palamada and/or Jayaraj is thus misplaced. Even if the disclosure in these publications diverged from the claimed subject matter, the presence of inoperative embodiments within the scope of a claim does not render a claim non-enabled. The standard is whether a skilled person could determine which embodiments that were conceived, but not yet made, would be inoperative or operative with expenditure of no more effort than is normally required in the art. Atlas Powder Co. v. E.I. du Pont de Nemours & Co., 750 F.2d 1569, 1577, 224 USPQ 409, 414 (Fed. Cir. 1984); MPEP 2164.08(b).

It is therefore respectfully submitted that Applicants' specification, in view of the disclosure contained references cited therein, provides more than sufficient guidance to objectively enable one of ordinary skill in the art to make and use the claimed invention with an effort that is no more than routine with in the art. Withdrawal of the rejection under 35 U.S.C. §112, ¶1, is respectfully requested.

Withdrawal of the all the rejections, and passage to allowance is courteously requested.

In view of the above remarks, favorable reconsideration is courteously requested. If there are any remaining issues which could be expedited by a telephone conference, the Examiner is

courteously invited to telephone counsel at the number indicated below.

The Commissioner is hereby authorized to charge any fees associated with this response to Deposit Account No. 13-3402.

Respectfully submitted,

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Attorney Docket No.: RUFF-0003

Date: December 6, 2007

Encl:
Fujita et al. (*Dibetologia*, 1998)
Dieter et al. (*Obesity Research*, 2004)